

Claims

1. A photodetector characterized by comprising:

a plurality of detector elements arranged over a substrate having light-transparent property and connected in parallel; and

5 being capable of detecting light from a multiplicity of directions.

2. The photodetector according to claim 1, characterized in that

the plurality of detector elements comprise a first detector element and a second detector element;

the first detector element is formed by a first electrode, a first semiconductor
10 film, and a second electrode; and

the second detector element is formed by the first electrode, a second semiconductor film, and a third electrode.

3. The photodetector according to claim 2, characterized in that

the first electrode and the third electrode are formed by a conductive film
15 having light-transparent property; and

the second conductive film is formed by a metal film.

4. The photodetector according to claim 1, characterized in that

the plurality of detector elements comprise a first detector element, a second detector element and a third detector element;

20 the first detector element is formed by a first electrode, a first semiconductor film, and a second electrode;

the second detector element is formed by the first electrode, a second semiconductor film, and a third electrode; and

the third detector element is formed by the first electrode, the first
25 semiconductor film, and a fourth electrode.

5. The photodetector according to claim 4, characterized in that
the first electrode and the third electrode are formed by a conductive film
having light-transparent property; and

the second electrode and the fourth electrode are formed by a metal film.

5 6. The photodetector according to claim 3 or 5, characterized in that
the conductive film having light-transparent property is formed by an indium
oxide-tin oxide alloy, an indium oxide-zinc oxide alloy, or zinc oxide; and

the metal film is formed by a film containing an element of gold, copper,
nickel, platinum, or silver.

10 7. The photodetector according to claim 2 or 4, characterized in that
the first semiconductor film and the second semiconductor film are formed by
an amorphous silicon film, a silicon film having PIN junction, or a fine crystalline
silicon film.

8. A portable information tool characterized by comprising:

15 a first housing and a second housing coupled together through a hinge portion
so as to be able to be opened and closed,

the first housing includes a first display portion and a second display portion
provided on different surfaces;

the second housing includes an operation portion;

20 the first display portion and the operation portion are foldable so as to face
each other; and

a photodetector includes a plurality of detector elements connected in parallel.

9. The portable information tool according to claim 8, characterized in that
the photodetector is provided in the first housing.

25 10. The portable information tool according to claim 8, characterized in that

the photodetector is provided in the second housing.

11. The portable information tool according to claim 8, characterized in that the photodetector is provided under an operation button having light-transparent property of the operation portion.

5 12. The portable information tool according to claim 8, characterized in that the plurality of detector elements include a first detector element and a second detector element;

the first detector element detects an intensity of illumination on a side of the first display portion in a state where the first housing and the second housing are
10 opened; and

the second detector element detects an intensity of illumination on a side of the second display portion in a state where the first housing and the second housing are folded.

13. The portable information tool according to claim 8, characterized in that
15 the plurality of detector elements include a first detector element and a second detector element;

the first detector element detects an intensity of illumination on a side of the first display portion in a state where the first housing and the second housing are opened; and

20 the first detector element detects the brilliance in the first display portion and the second detector element detects an intensity of illumination on a side of the second display portion in a state where the first housing and the second housing are folded.

14. The portable information tool according to claim 8, characterized in that the plurality of detector elements include a first detector element, a second
25 detector element and a third detector element;

the first detector element detects an intensity of illumination on a side of the first display portion in a state where the first housing and the second housing are opened; and

the second detector element detects an intensity of illumination on a side of the second display portion and the third detector element detects a brilliance of the first display portion in a state where the first housing and the second housing are folded.

15 15. The portable information tool according to claim 8, characterized in that the first display portion and the second display portion are formed by a liquid crystal display device or an EL display device.

10 16. The portable information tool according to claim 8, characterized in that the first display portion and the second display portion are formed by a display device capable of emitting light from both surfaces.

17. A portable information tool characterized by comprising:

15 a first housing and a second housing coupled together through a hinge portion so as to be able to be opened and closed,

the first housing includes a first display portion and a second display portion provided on different surfaces;

the second housing is provided with an operation portion;

20 the first display portion and the operation portion are foldable so as to face each other; and

the portable information tool characterized by further comprising:

a first mean for detecting an intensity of illumination on a side of the first display portion in a state where the first housing and the second housing are opened;

25 a second mean for displaying by controlling a brilliance of the first display portion depending upon a result detected by the first mean;

a third mean for detecting an intensity of illumination on a side of the second display portion in a state where the first housing and the second housing are folded; and

a fourth mean for displaying by adjusting a brilliance of the second display portion depending upon a result detected by the third mean.

5 18. The portable information tool according to claim 17, characterized in that the first mean and the third mean are provided in the first housing.

19. The portable information tool according to claim 17, characterized in that the first mean and the third mean are provided in the second housing.

20. The portable information tool according to claim 17, characterized in that
10 the first mean and the third mean are provided under operation buttons having light-transparent property of the operation portion.

21. The portable information tool according to claim 17, characterized by further comprising:

 a fifth mean for making the first display portion display and detecting a
15 brilliance thereof in a state where the first housing and the second housing are folded;
 and

 a sixth mean for displaying by controlling the brilliance of the first display portion depending upon a result detected by the fifth mean and the result detected by the first mean.

20 22. The portable information tool according to claim 17, characterized in that the first display portion and the second display portion are formed by a liquid crystal display device or an EL display device.

 23. The portable information tool according to claim 17, characterized in that
 the first display portion and the second display portion are formed by a display
25 device capable of emitting light from both surfaces.

24. A method for displaying a foldable portable information tool having a photodetector characterized by comprising:

obtaining a first result of detection by detecting an intensity of illumination on a side of a first display portion depending upon a first detector element in a state where

5 a first housing and the second housing are opened;

displaying by controlling an brilliance of the first display portion depending upon the first result of detection;

obtaining a second result of detection by detecting an intensity of illumination on a side of a second display portion depending upon a second detector element in a

10 state where the first housing and the second housing are folded; and

displaying by adjusting an brilliance of the second display portion depending upon the second result of detection.

25. The method for displaying the portable information tool according to claim 24, characterized in that

15 displaying the first display portion in a state where the first housing and the second housing are folded;

obtaining a third result of detection by detecting a brilliance thereof depending upon the first detector element; and

20 displaying by controlling the brilliance of the first display portion depending upon the third result of detection and the first result of detection.

26. A method for displaying a foldable portable information tool having a photodetector characterized by comprising:

obtaining a first result of detection by detecting a brilliance of the first display portion depending upon a first detector element in a state where a first housing and a

25 second housing are folded;

then obtaining a second result of detection by detecting an intensity of illumination on a side of the first display portion depending upon a second detector element in a state where the first housing and the second housing are opened;

displaying by controlling the brilliance of the first display portion depending
5 upon the first result of detection and the second result of detection;

obtaining a third result of detection by detecting an intensity of illumination on a side of the second display portion depending upon the third detector element in a state where the first housing and the second housing are folded; and

displaying by adjusting a brilliance of the second display portion depending
10 upon the third result of detection.